

WHAT IS CLAIMED IS:

1. A high energy plating process for static seals comprising:
supporting a predetermined quantity of metallic seals at non-sealing surface
locations with the metallic seals disposed in series on a conveyor having a predetermined
5 processing path; and
continuously moving the metallic seals on the conveyor in series through an
electro-plating stage of the predetermined processing path to electro-deposit a metallic
coating on the metallic seals using a high current density and a high chemical flow rate.
- 10 2. The process according to claim 1, further comprising
continuously moving the metallic seals on the conveyor in series through an initial
cleaning stage of the predetermined processing path prior to moving the metallic seals
through the electro-plating stage.
- 15 3. The process according to claim 2, further comprising
continuously moving the metallic seals on the conveyor in series through an initial
rinsing stage of the predetermined processing path after moving the metallic seals through
the cleaning stage and prior to moving the metallic seals through the electro-plating stage.
- 20 4. The process according to claim 3, further comprising
continuously moving the metallic seals on the conveyor in series through a final
rinsing stage of the predetermined processing path after moving the metallic seals through
the electro-plating stage.
- 25 5. The process according to claim 4, wherein
the continuously moving of the metallic seals on the conveyor in series through the
electro-plating stage of the predetermined processing path includes
continuously moving the metallic seals on the conveyor in series through an under
plating stage of the predetermined processing path, and
30 continuously moving the metallic seals on the conveyor in series through a top
plating stage of the predetermined processing path.

6. The process according to claim 5, wherein
the continuously moving of the metallic seals on the conveyor in series through the
electro-plating stage of the predetermined processing path includes

5 continuously moving the metallic seals on the conveyor in series through an
intermediate rinsing stage of the predetermined processing path after moving the metallic
seals through the under plating stage and prior to moving the metallic seals through the
top-plating stage.

10 7. The process according to claim 3, wherein
the continuously moving of the metallic seals on the conveyor in series through the
electro-plating stage of the predetermined processing path includes

continuously moving the metallic seals on the conveyor in series through an under
plating stage of the predetermined processing path, and

15 continuously moving the metallic seals on the conveyor in series through a top
plating stage of the predetermined processing path.

8. The process according to claim 7, wherein
the continuously moving of the metallic seals on the conveyor in series through the
20 electro-plating stage of the predetermined processing path includes

continuously moving the metallic seals on the conveyor in series through an
intermediate rinsing stage of the predetermined processing path after moving the metallic
seals through the under plating stage and prior to moving the metallic seals through the
top-plating stage.

25 9. The process according to claim 1, wherein
the continuously moving of the metallic seals on the conveyor in series through the
electro-plating stage of the predetermined processing path includes

continuously moving the metallic seals on the conveyor in series through an under
30 plating stage of the predetermined processing path, and

continuously moving the metallic seals on the conveyor in series through a top
plating stage of the predetermined processing path.

10. The process according to claim 9, wherein
the continuously moving of the metallic seals on the conveyor in series through the
electro-plating stage of the predetermined processing path includes

5 continuously moving the metallic seals on the conveyor in series through an
intermediate rinsing stage of the predetermined processing path after moving the metallic
seals through the under plating stage and prior to moving the metallic seals through the
top-plating stage.

10 11. The process according to claim 9, wherein
the under plating stage includes at least one striking stage that is substantially
shorter than said top plating stage.

12. The process according to claim 11, wherein
15 said top plating stage is at least about ten times longer than said at least one
striking stage.

13. The process according to claim 1, wherein
the continuously moving of the metallic seals on the conveyor in series through the
20 electro-plating stage of the predetermined processing path includes
continuously moving the metallic seals on the conveyor in series through at least
two different plating stages of the predetermined processing path.

14. The process according to claim 1, wherein
25 the metallic seals are oriented vertically during the continuously moving of the
metallic seals on the conveyor in series through the electro-plating stage of the
predetermined processing path.

15. The process according to claim 1, wherein
30 the process is a continuous high volume process electro-depositing the metallic
coating on the metallic seals at a rate of at least about 5 seals per minute.

16. The process according to claim 1, wherein
the metallic coating is a soft metallic coating.

5 17. The process according to claim 16, wherein
the metallic coating includes at least one of tin, tin alloy, lead, gold, silver, silver
alloy, nickel, copper and indium.

18. The process according to claim 17, wherein
the metallic seals are constructed of one of Stainless Steel, Inconel and Waspaloy
10 prior to electro-depositing the metallic coating during the electro-plating stage of the
predetermined processing path.

19. The process according to claim 1, wherein
the metallic seals are constructed of one of Stainless Steel, Inconel and Waspaloy
15 prior to electro-depositing the metallic coating during the electro-plating stage of the
predetermined processing path.

20. The process according to claim 1, wherein
the high current density used during the continuously moving of the metallic seals
20 on the conveyor in series through the electro-plating stage of the predetermined processing
path is between about 200 ASF and about 1000 ASF during at least a portion of the
electro-plating stage.